

AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A process for grinding a ~~work~~ workpiece for a non-circular rotor for grinding an outer peripheral surface of said ~~work~~ workpiece, which includes a base circle portion (50) having a constant curvature radius, and a cam lobe (51) leading to circumferential opposite ends of said base circle portion (50), by a rotary grindstone (22) advanced and retreated by an NC control depending on the profile of said ~~work~~ workpiece, while rotating said ~~work~~ workpiece for the non-circular rotor about an axis thereof,

the process comprising characterized in that the following steps are carried out:
a first step of detecting a predetermined lift amount, between said base circle portion (50) and said cam lobe (51), of the outer peripheral surface of said ~~work~~ workpiece at a given point to index a standard phase of said ~~work~~ workpiece, and a second step of advancing or retreating the rotary grindstone (22) by the NC control based on the standard phase of said ~~work~~ workpiece indexed at said first step to grind the outer peripheral surface of said ~~work~~ workpiece.

2. (Cancelled)

3. (Currently Amended) An apparatus for grinding a ~~work~~ workpiece for a non-circular rotor, comprising a work-rotating means (8) for rotating the ~~work~~ workpiece, which includes a base circle portion (50) having a constant curvature radius, and a cam lobe (51) leading to circumferential opposite ends of said base circle portion (50), for the non-circular rotor about an axis thereof, while supporting said ~~work~~ workpiece.

workpiece, a rotary grindstone (22) capable of grinding an outer peripheral surface of said ~~werk~~ (10) workpiece, grindstone-rotating and reciprocally moving means (18, 12) capable of being advanced and retreated with respect to the outer peripheral surface of said ~~werk~~ (10) workpiece, while driving said rotary grindstone (22) in rotation, a standard phase-indexing means for indexing a standard phase of said ~~werk~~ (10) workpiece, and an NC control unit (33) for advancing and retreating said rotary grindstone (22) to grind the outer peripheral surface of said ~~werk~~ (10) workpiece based on the standard phase of said ~~werk~~ (10) workpiece indexed by said standard phase-indexing means and previously input data for the profile of said ~~werk~~ (10) workpiece, characterized in that wherein said standard phase-indexing means comprises a standard phase sensor (35) for detecting a predetermined lift amount, between said base circle portion (50) and said cam lobe (51), of the outer peripheral surface of said ~~werk~~ (10) workpiece at a given point.

4. (Cancelled)

5. (Currently Amended) A camshaft which includes cams (10a, 10b—
10n) each ground by the process for grinding a workpiece for a non-circular rotor
according to claim 1 and comprising a base circle portion (50), ground by the process
for grinding a work for a non-circular rotor according to claim 1, and a cam lobe (51)
leading to circumferential opposite ends of said base circle portion (50), said camshaft
having no recess indicating a standard phase in an outer peripheral surface thereof.

6. (New) The apparatus for grinding a workpiece according to claim 3, further comprising a deflashing member mounted adjacent to the rotary grindstone, wherein the deflashing member advances substantially simultaneously with the rotary grindstone.

7. (New) The apparatus for grinding a workpiece according to claim 3, further comprising a sensor supporting arm for supporting the standard phase sensor between a detecting position and a resting position in which the standard phase sensor is spaced apart from the workpiece.